

Quantifying Summer Residency and Variation in Diel Behaviors of Lake Sturgeon in Buffalo Harbor, NY

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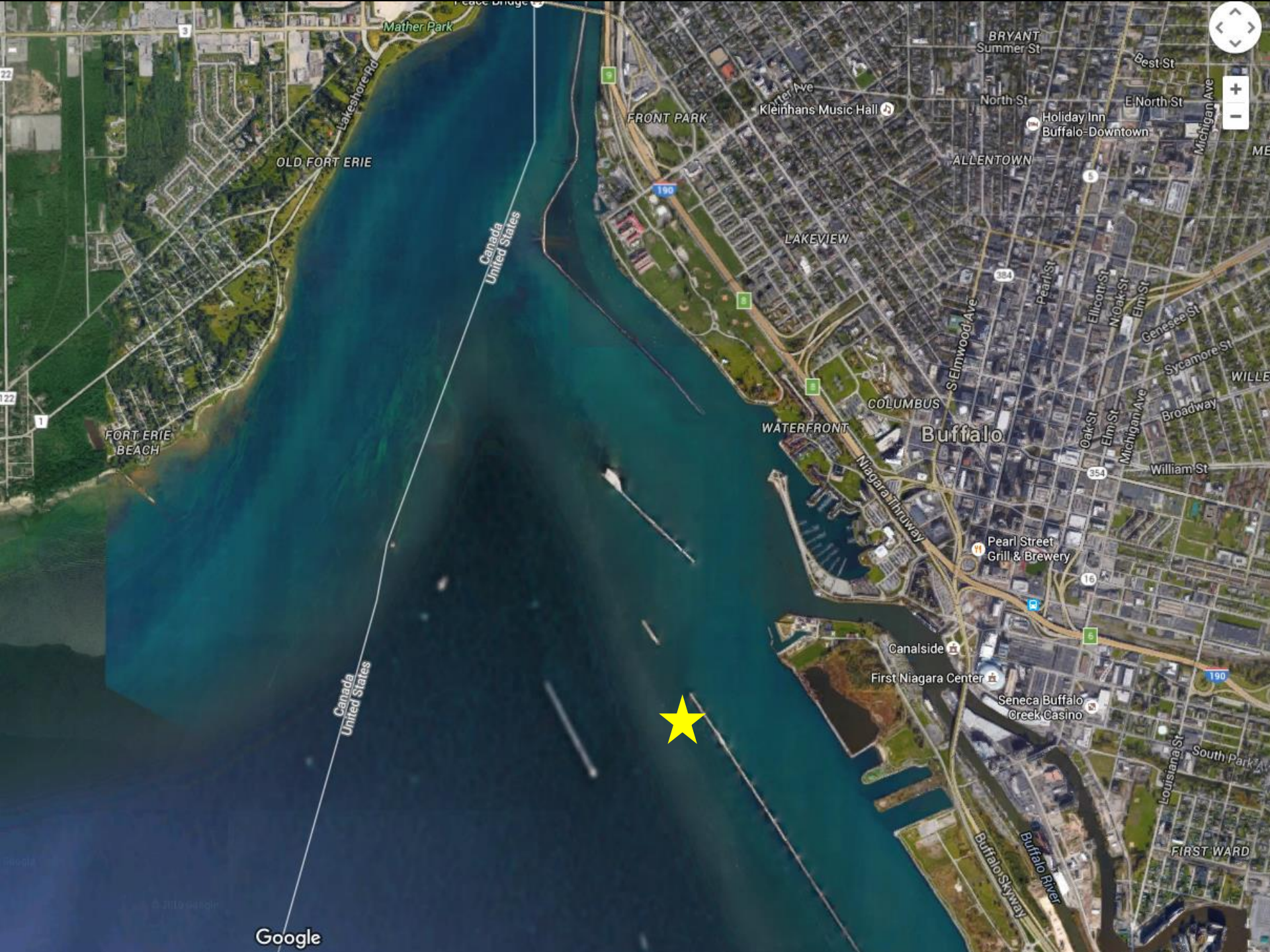


What are the fine and large scale movements and behaviors of Lake Sturgeon?

Immediate: Identify likely spawning sites

Longterm: Inform a sampling design







OLD FORT ERIE

FRONT PARK

LAKEVIEW

ALLENTOWN

Buffalo

COLUMBUS

WATERFRONT

Niagara Parkway

Canalside

First Niagara Center

Seneca Buffalo Creek Casino

Buffalo Skyway

FIRST WARD

BRYANT Summer St

North St

Holiday Inn Buffalo-Downtown

Best St

E North St

Michigan Ave

Pearl St

Ellicott St

N Oak St

Elm St

Genesee St

Sycamore St

Broadway

William St

Pearl Street Grill & Brewery

South Park Ave

Louisiana St

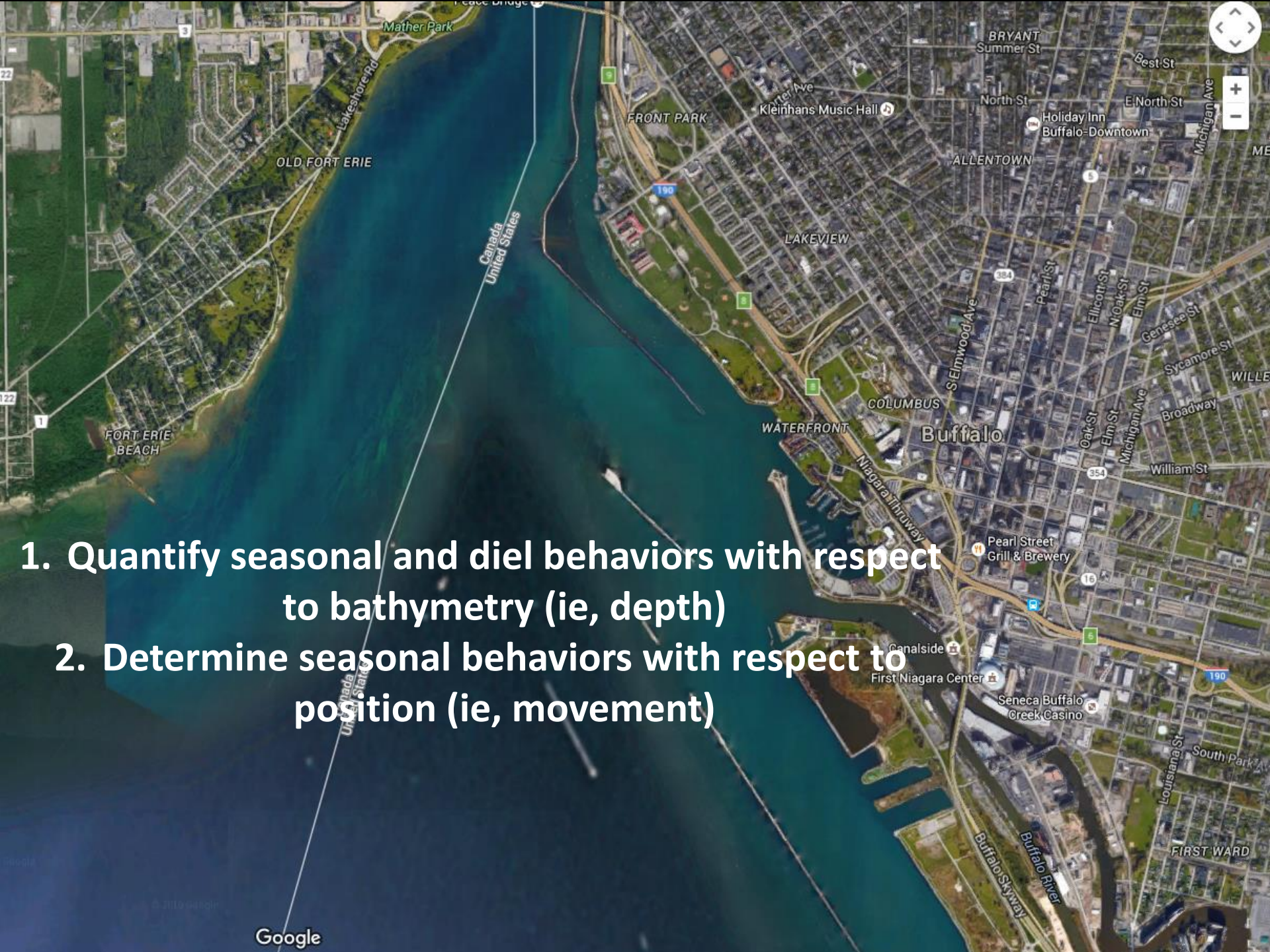
Mather Park

Lakeshore Rd

Canada
United States

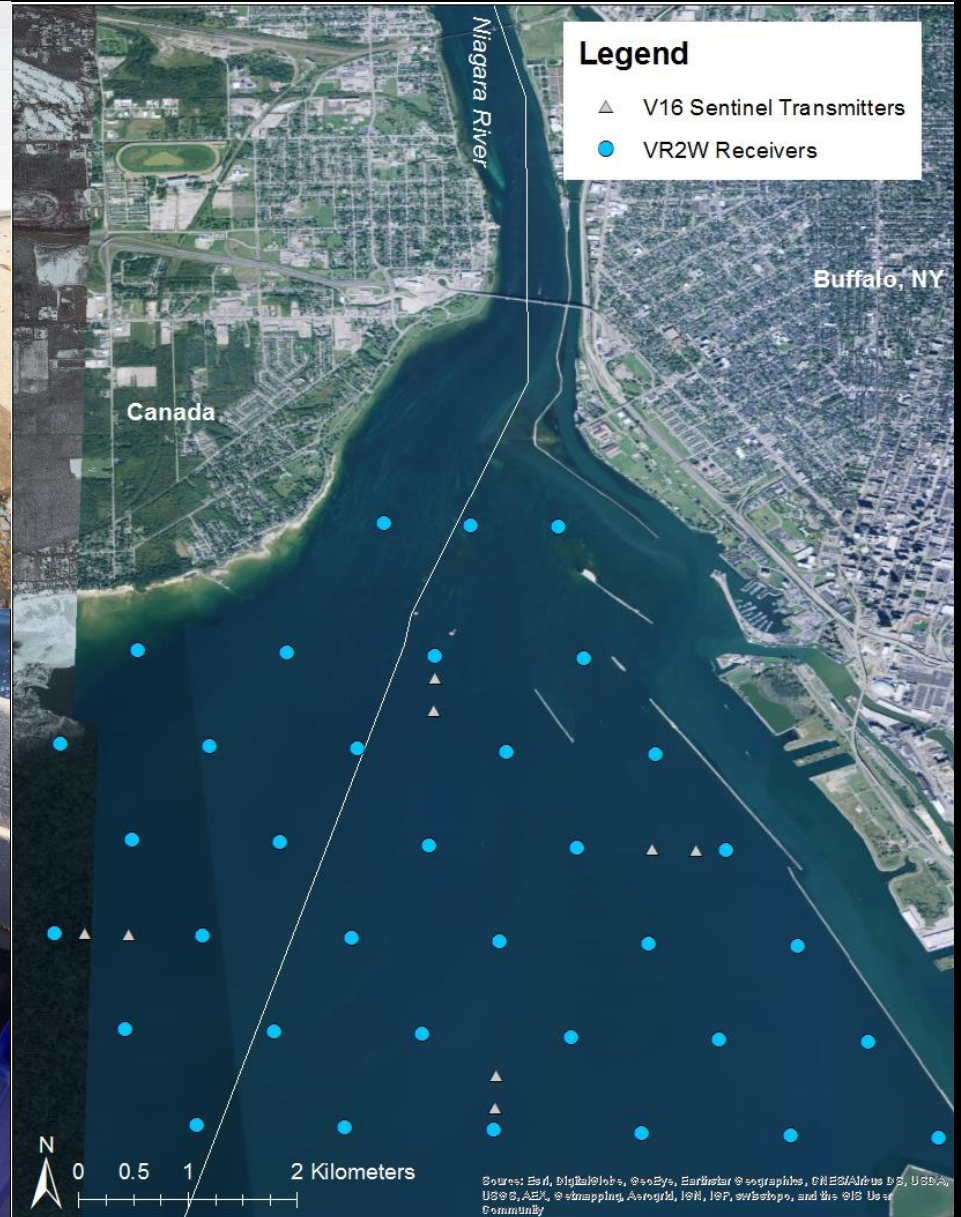
Canada
United States

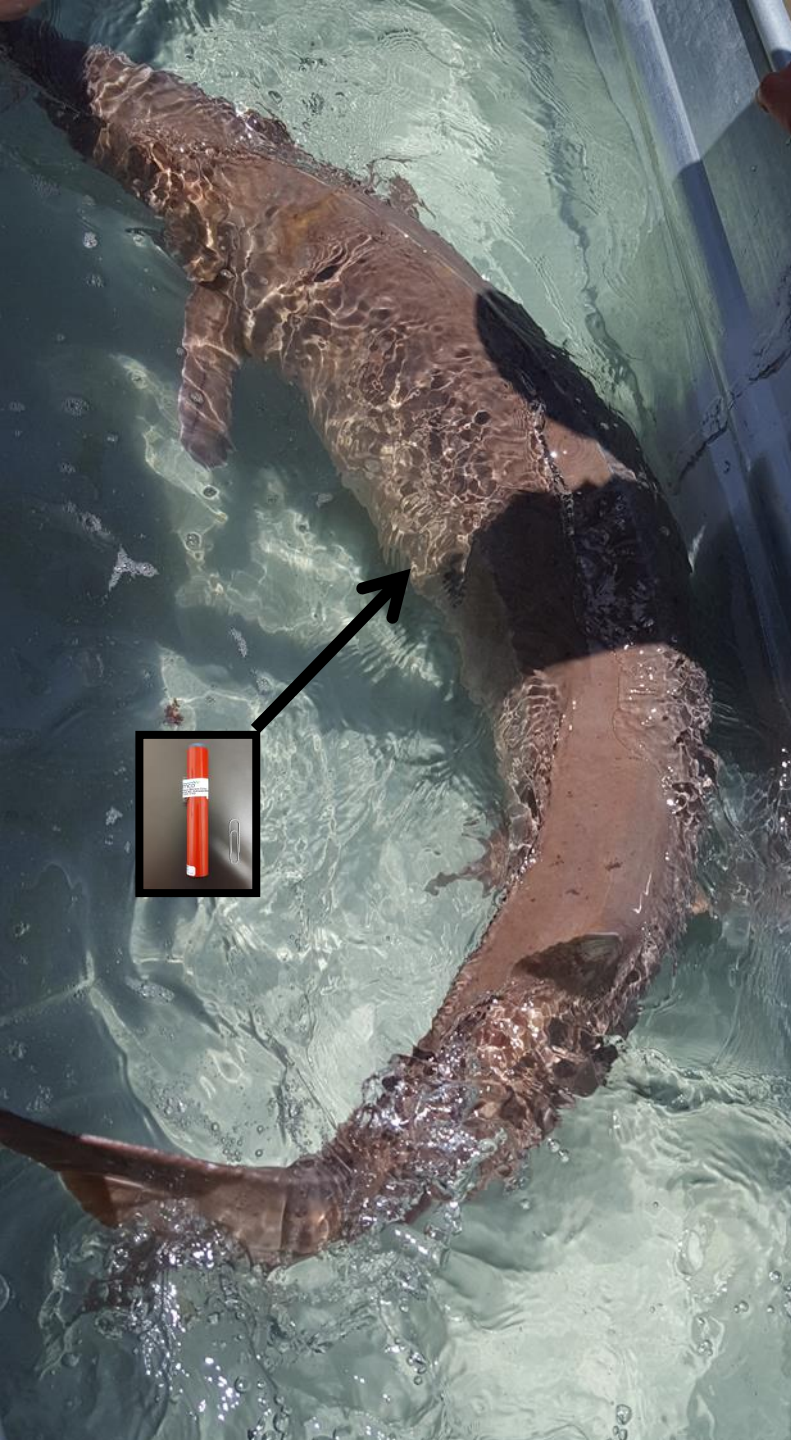
Google



1. Quantify seasonal and diel behaviors with respect to bathymetry (ie, depth)
2. Determine seasonal behaviors with respect to position (ie, movement)

Movement and Behavior

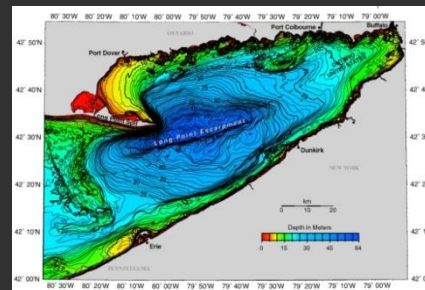




Timestamp



Temperature



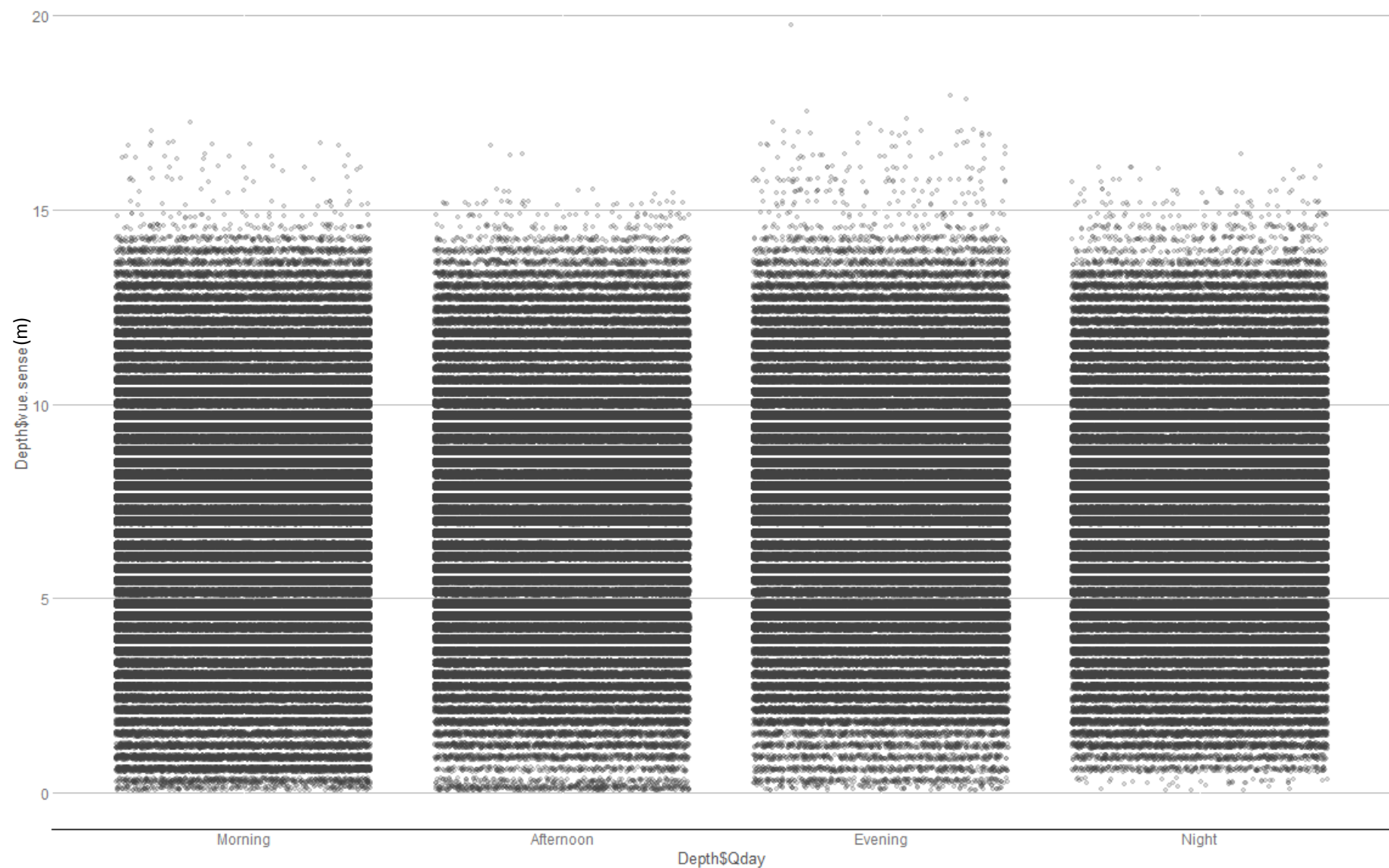
Depth

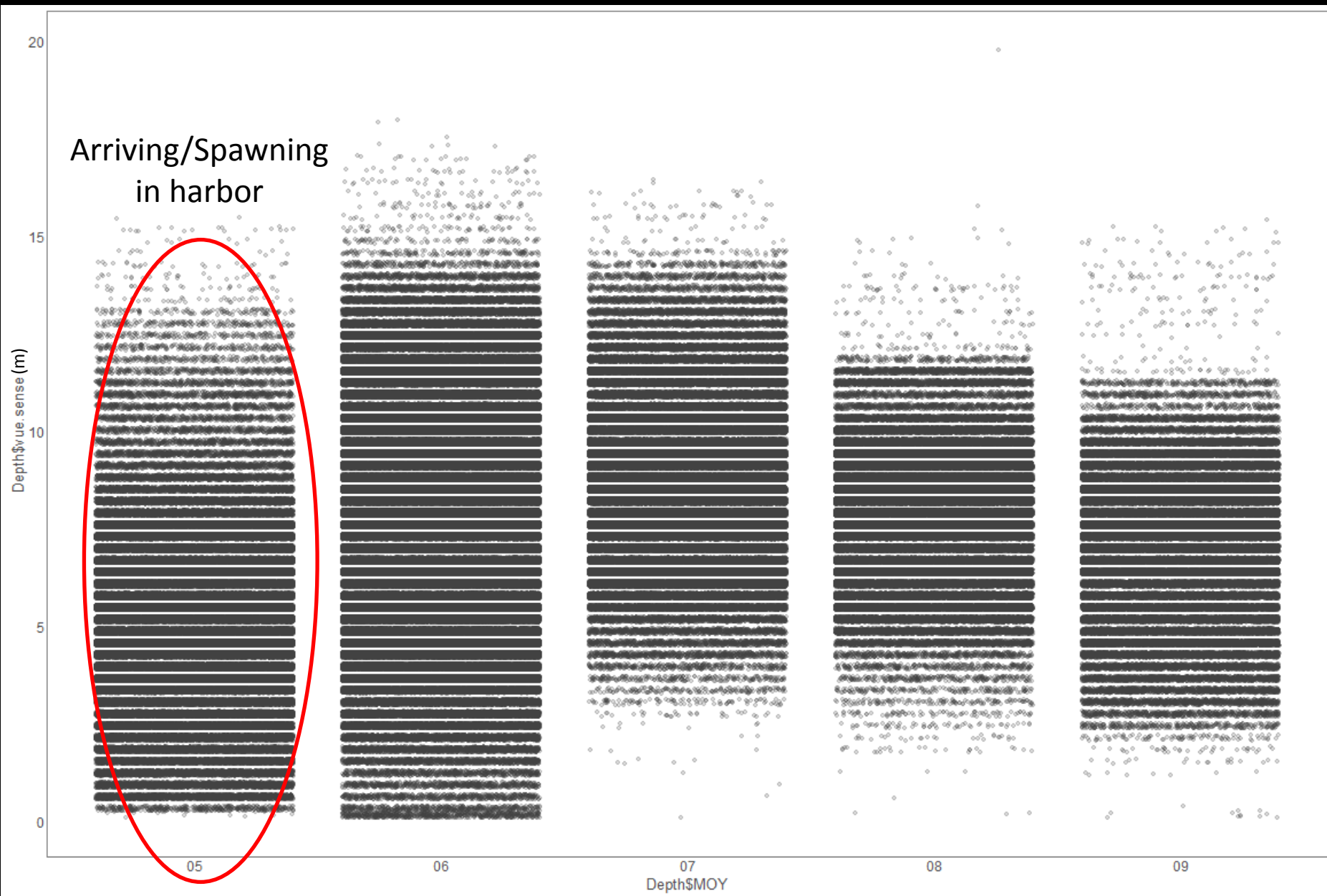
Model Selection

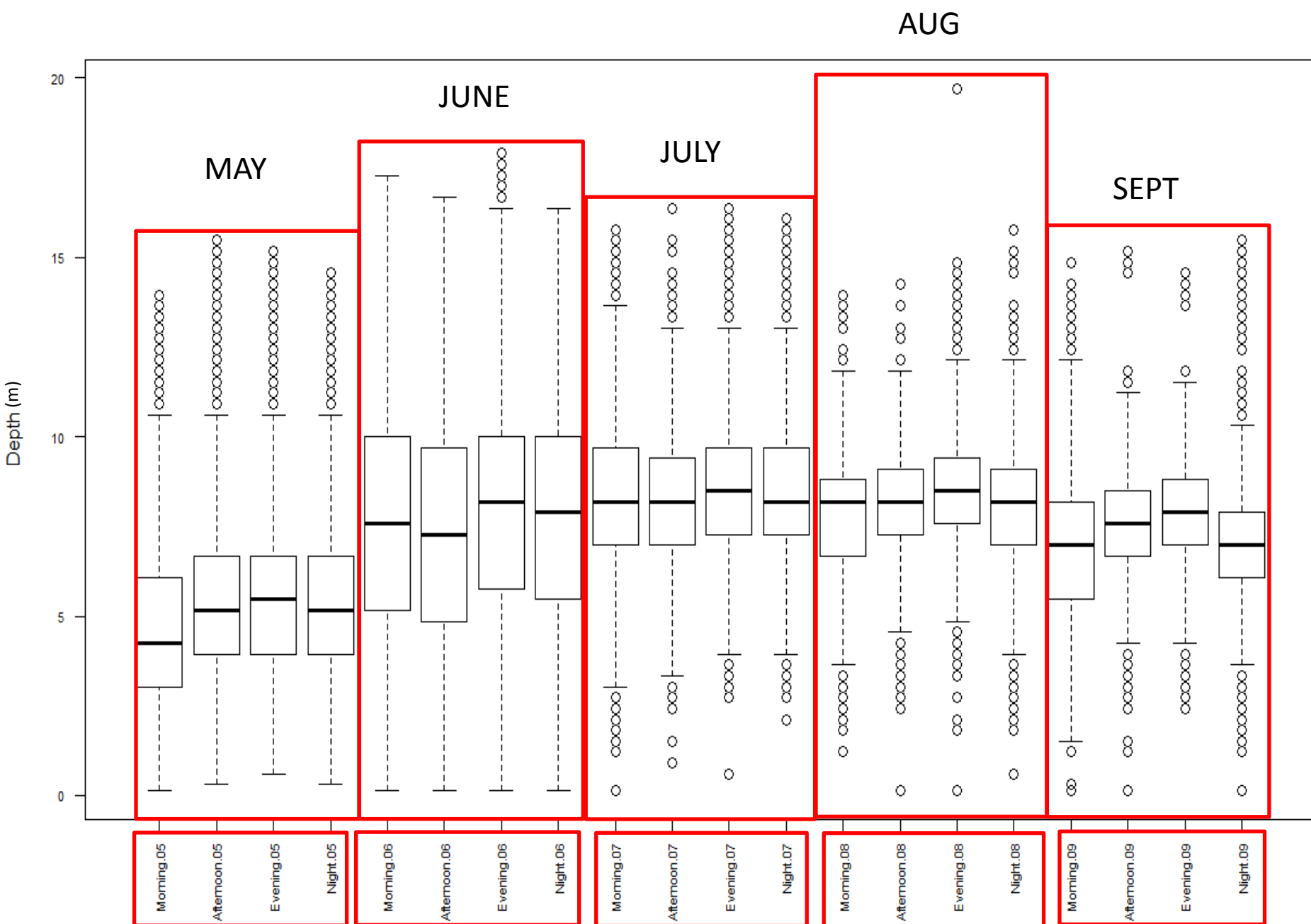
Covariates	Effect
Month	Fixed
Month	Random
Hour of Day	Random
Quarter of Day	Fixed
Quarter of Day	Random
Fish Status	Fixed
Fish Status	Random
Length	Fixed
Length	Random

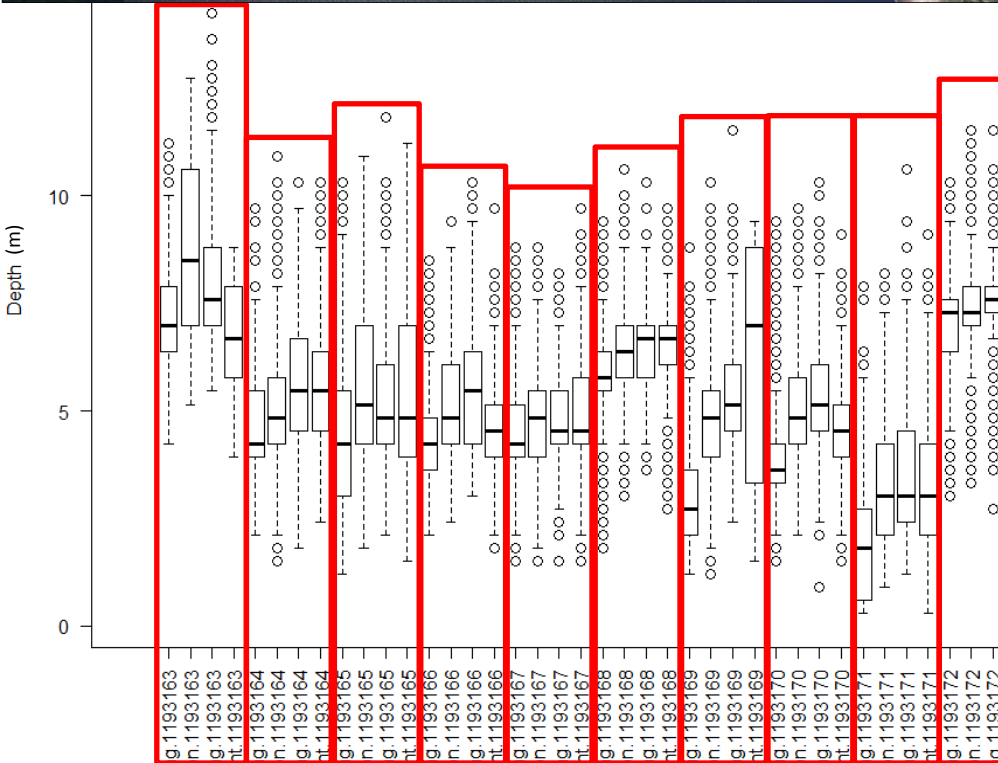
Depth ~
FE: Time of Day *
RE: Individual * Month of Year

Random effects: Groups	Variance	Std.Dev.
Individual	3.637	1.907
Residual	3.588	1.894

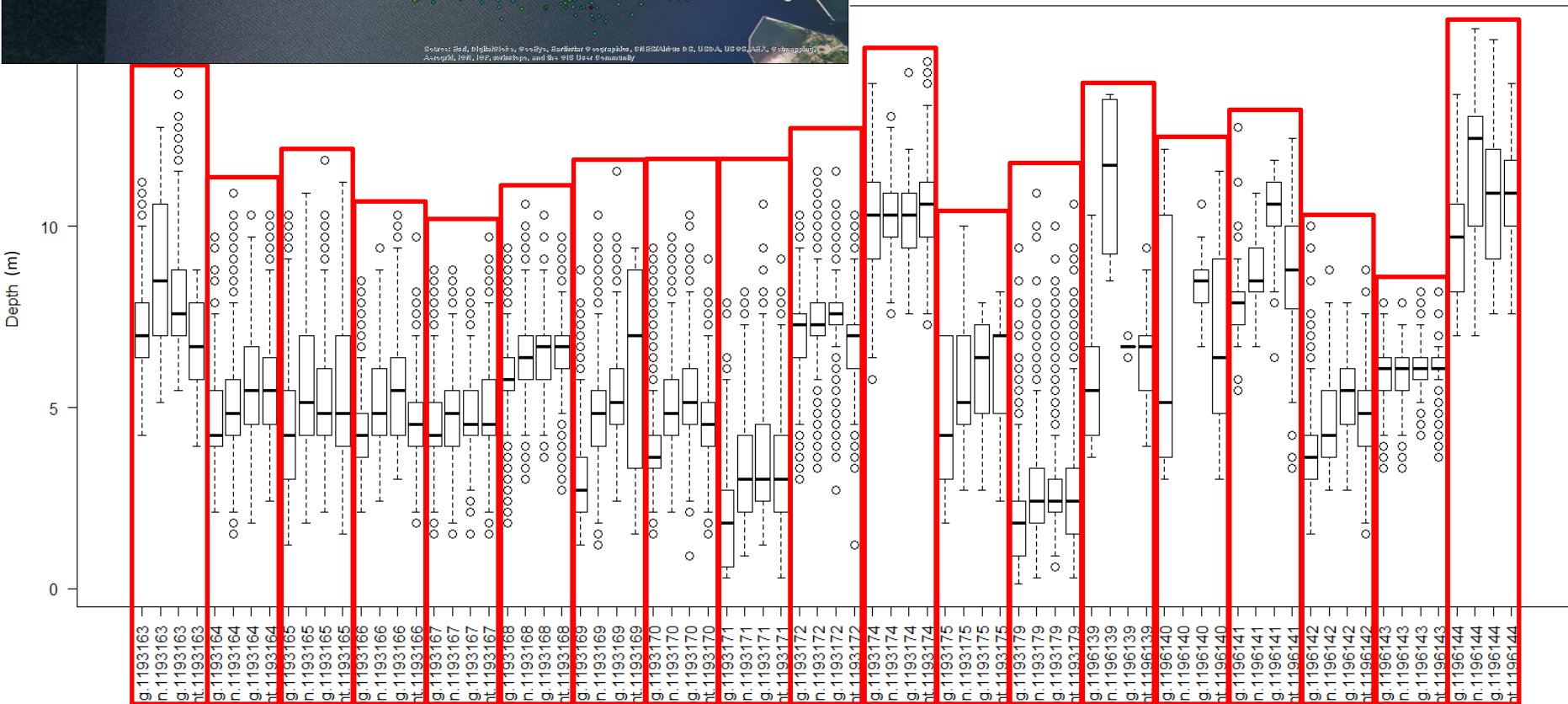


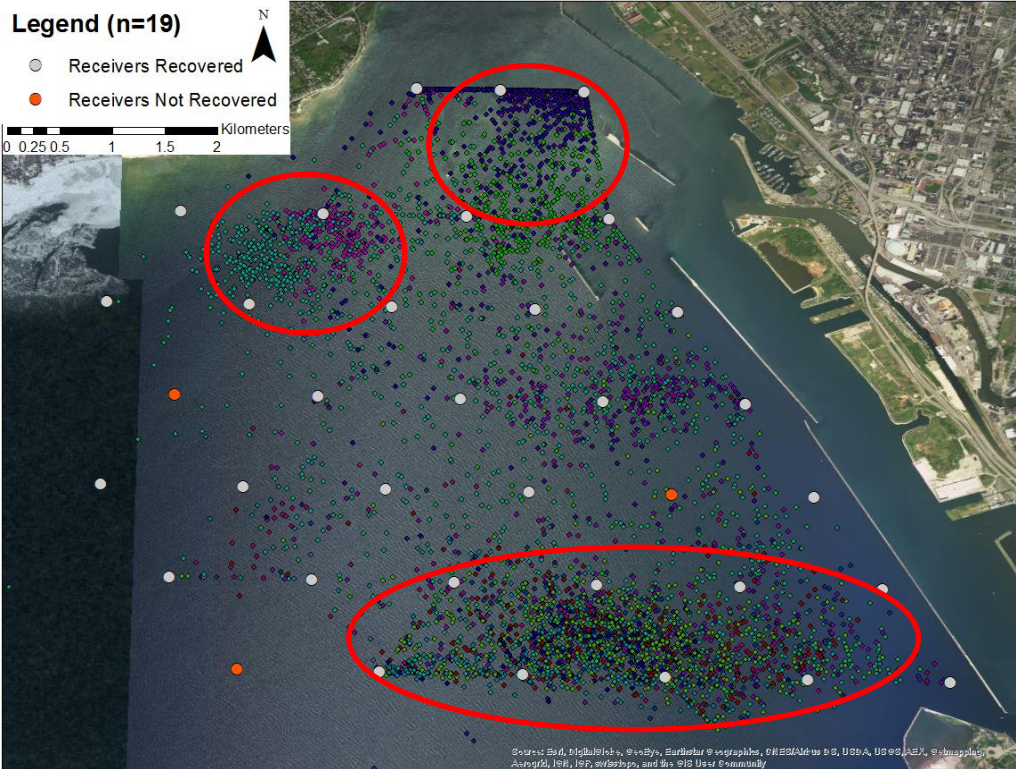




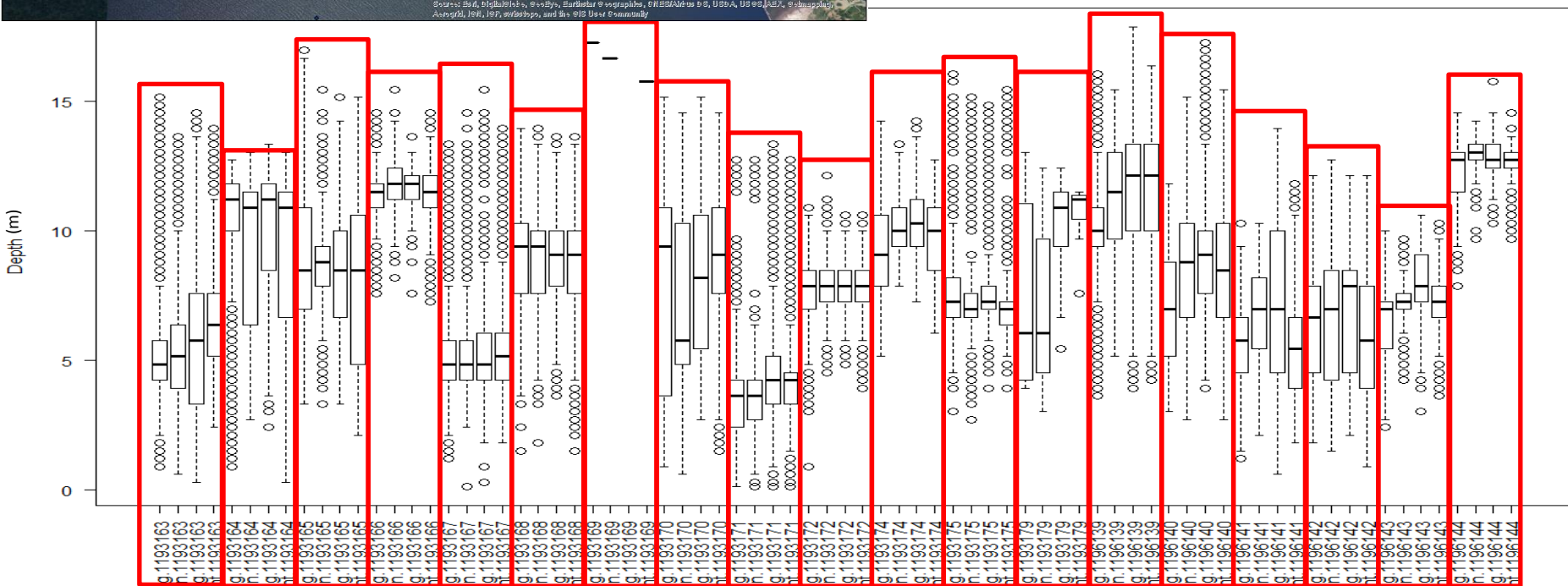


MAY

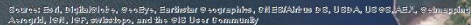




JUNE

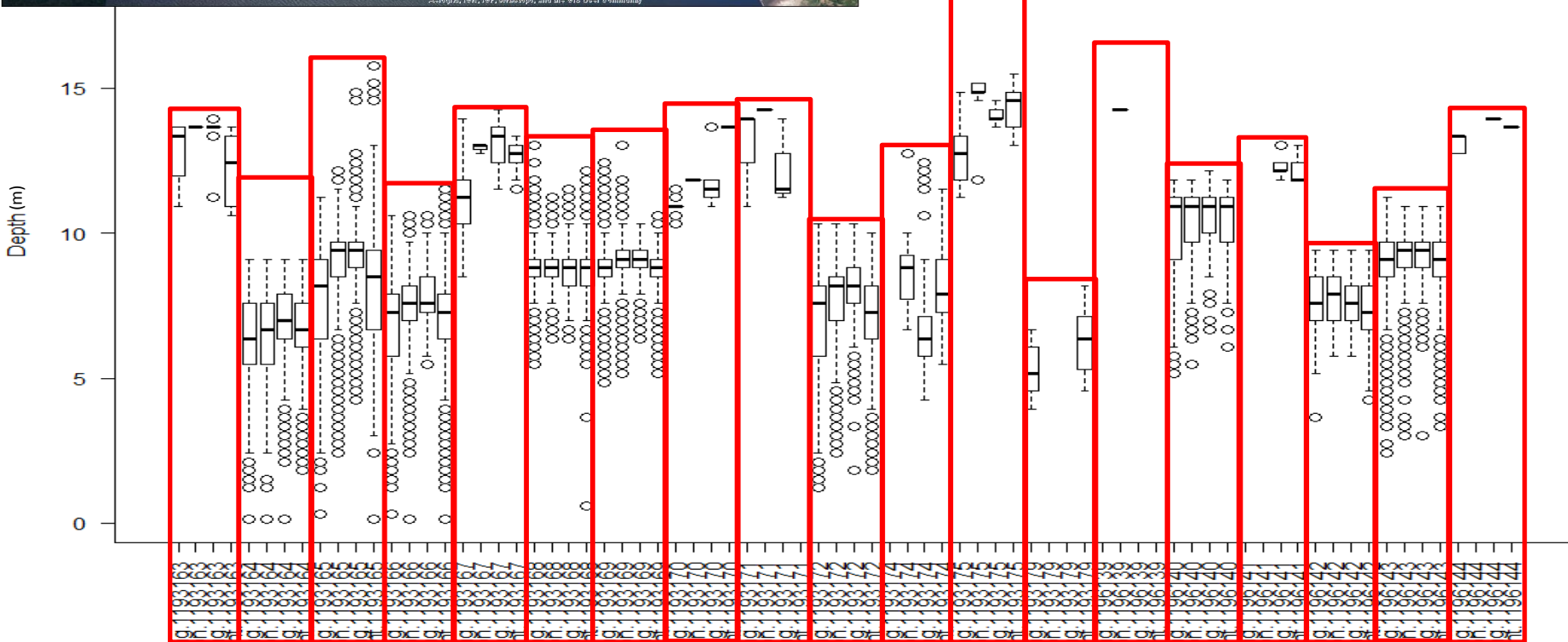


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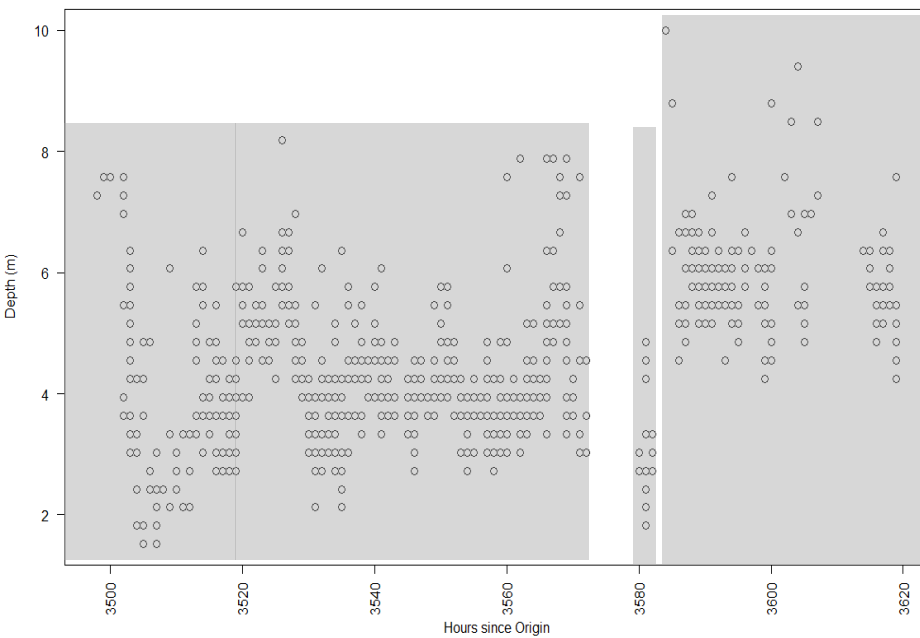


AUG/ SEPT



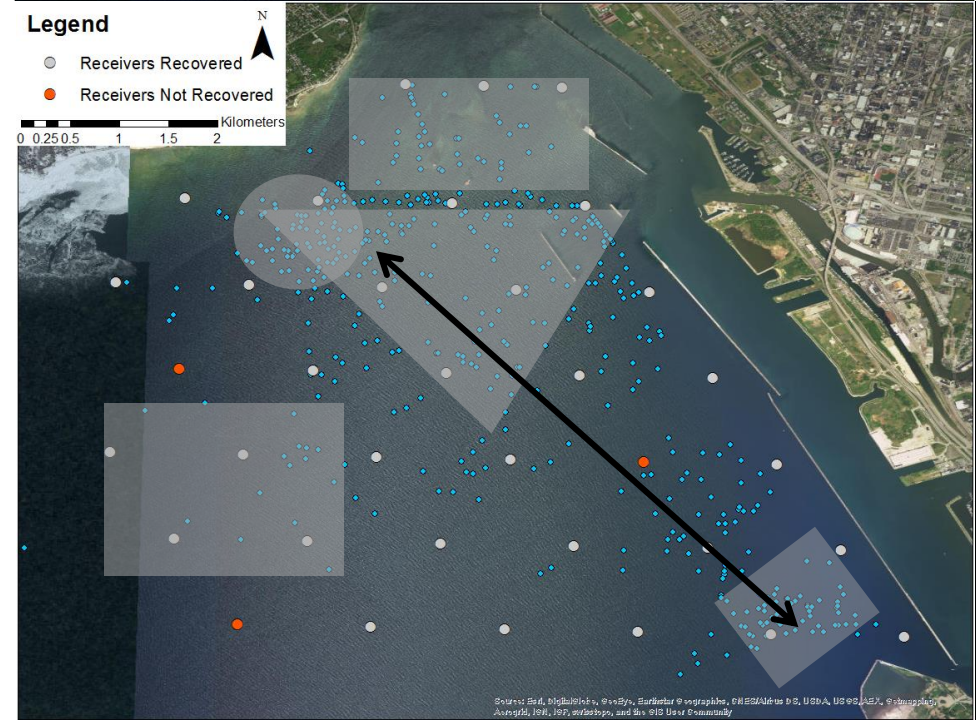
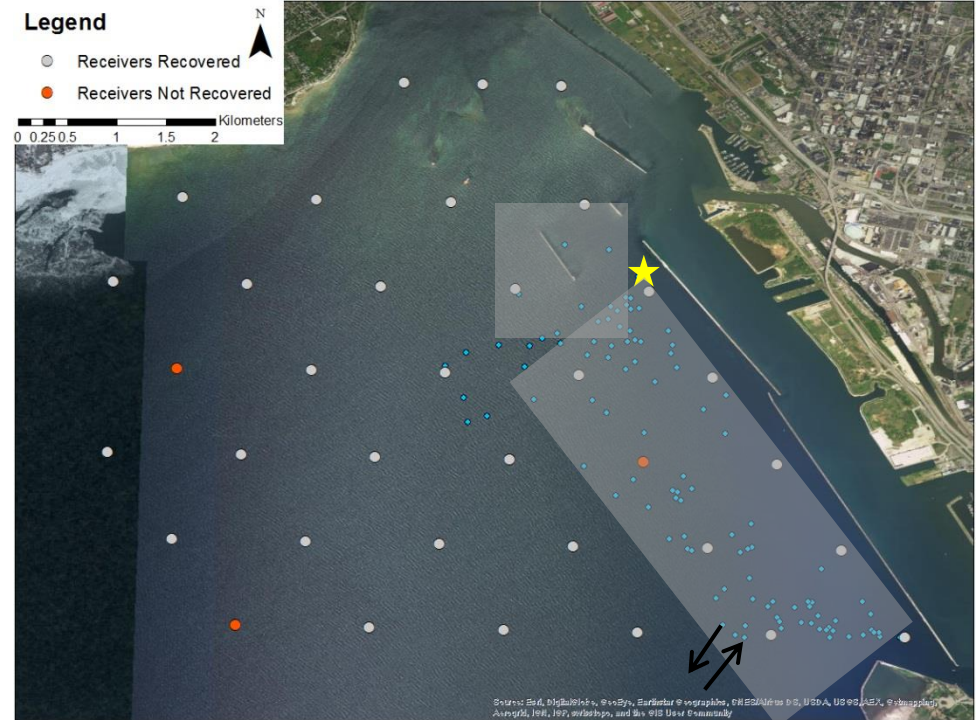
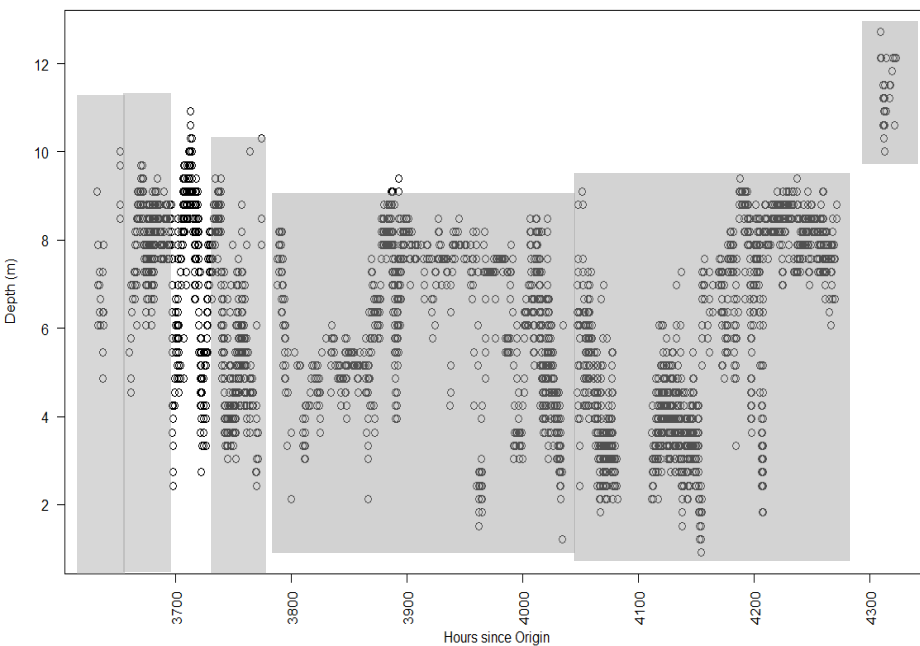
MAY

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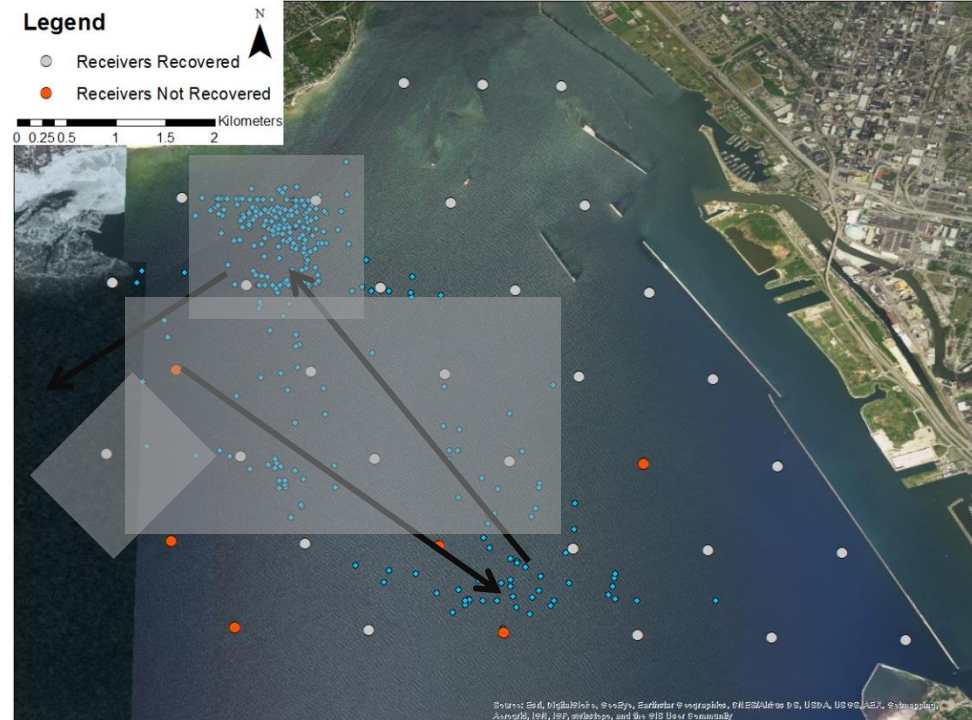
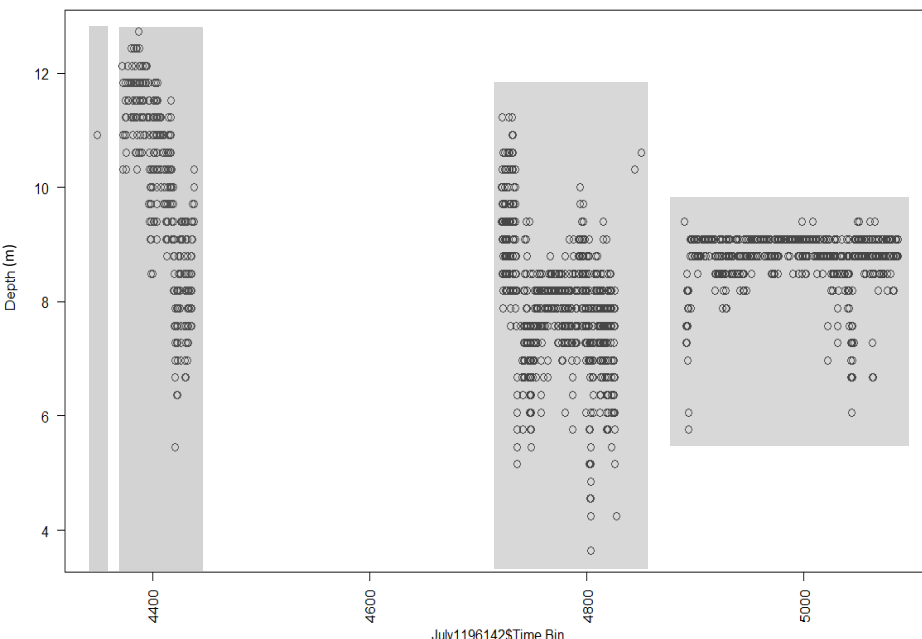
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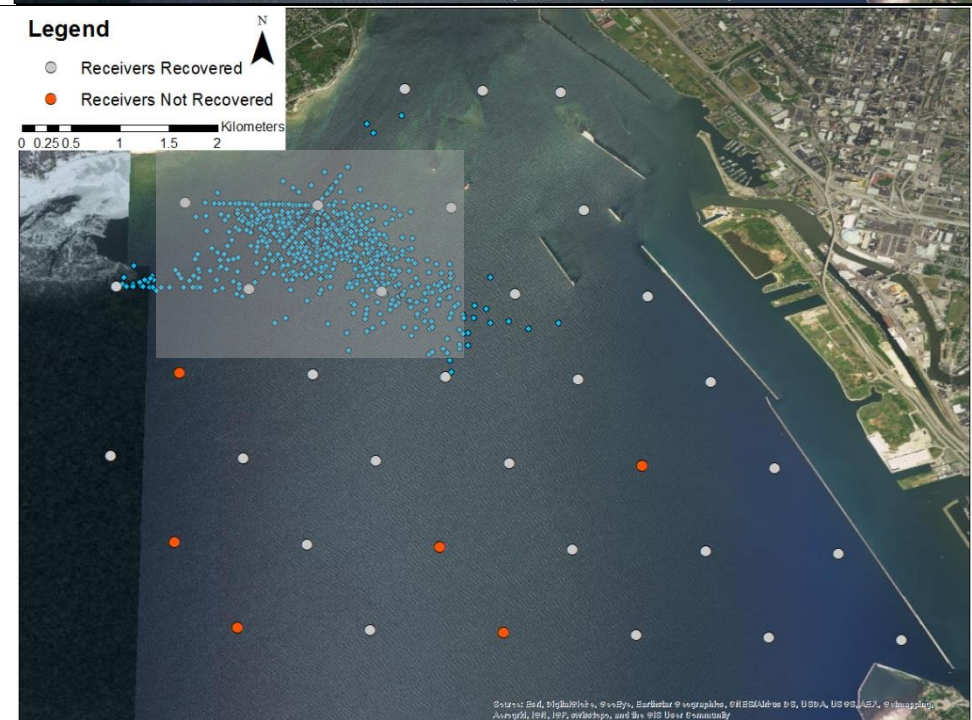
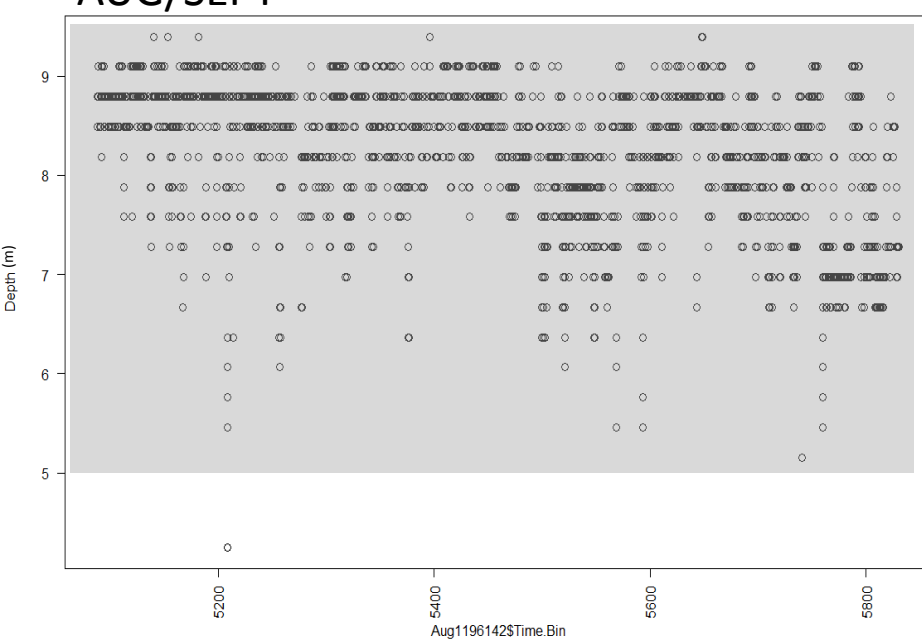
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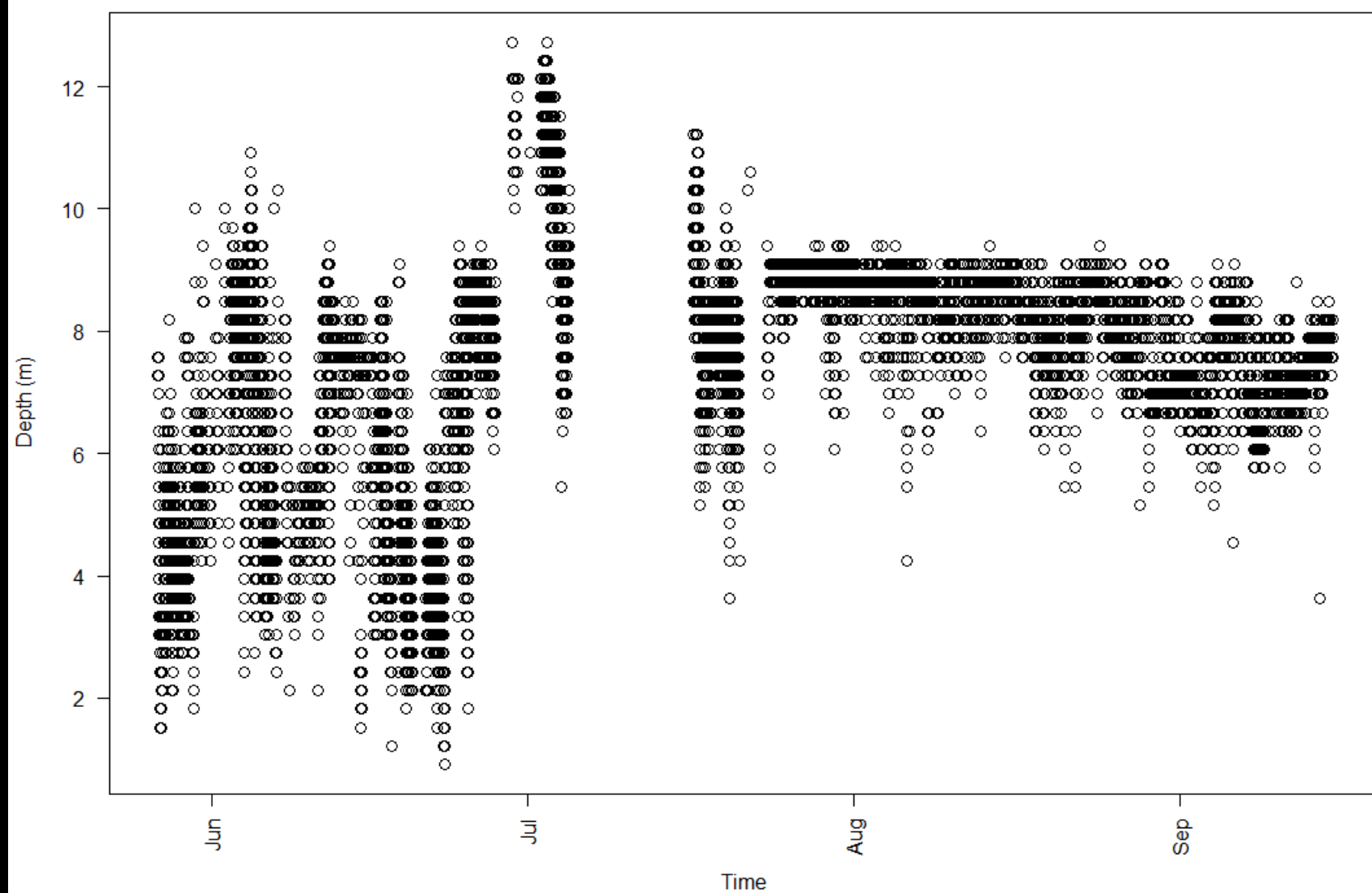
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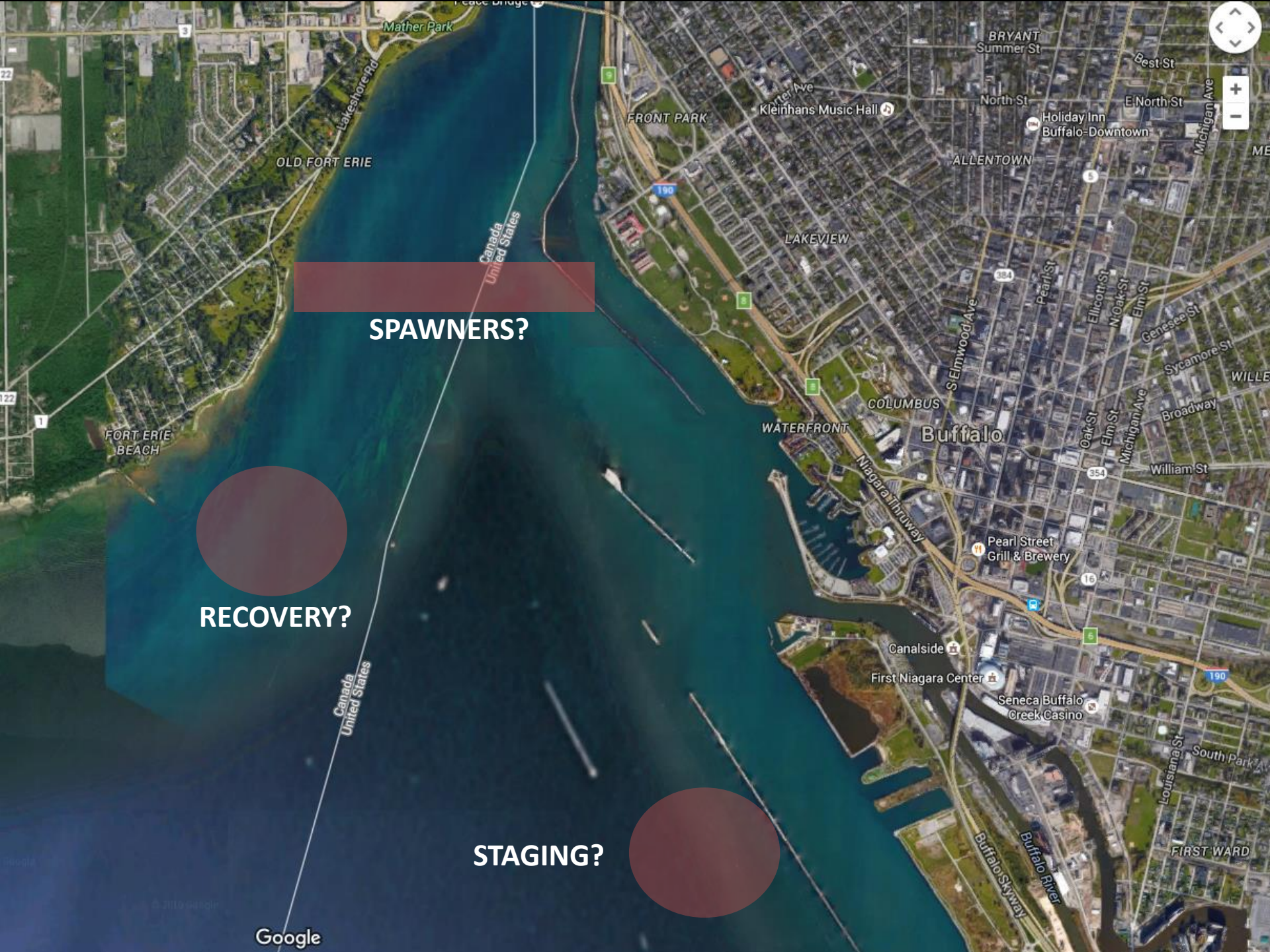




1. Depth preference?
Seasonal
Individually Variable

2. Movement preferences?
Seasonal
Individually Variable





SPAWNERS?

RECOVERY?

STAGING?



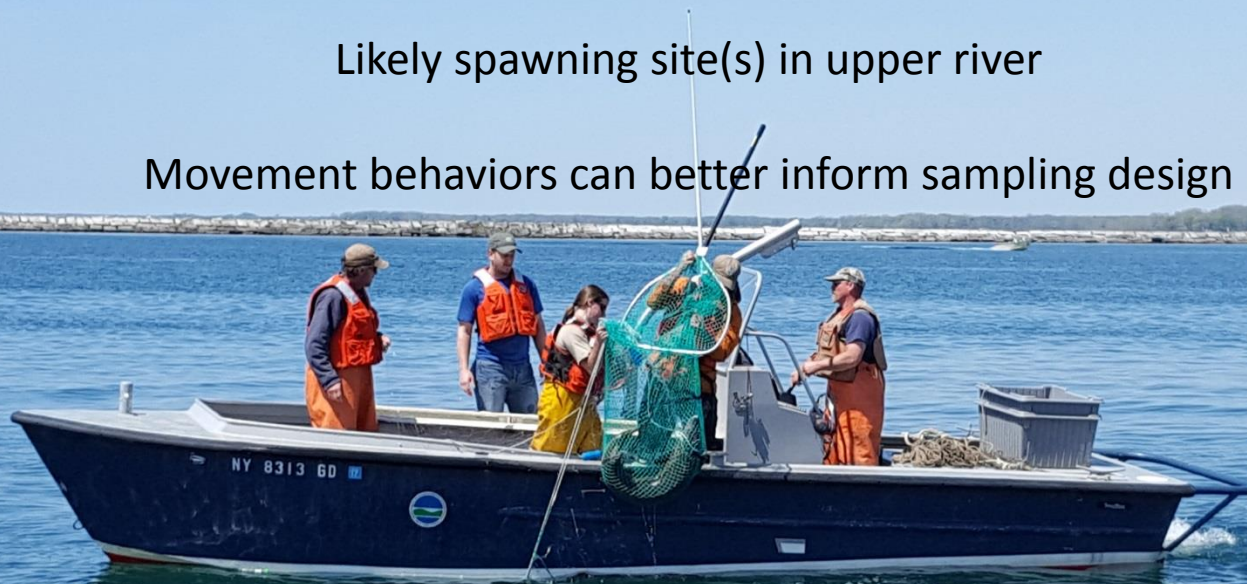


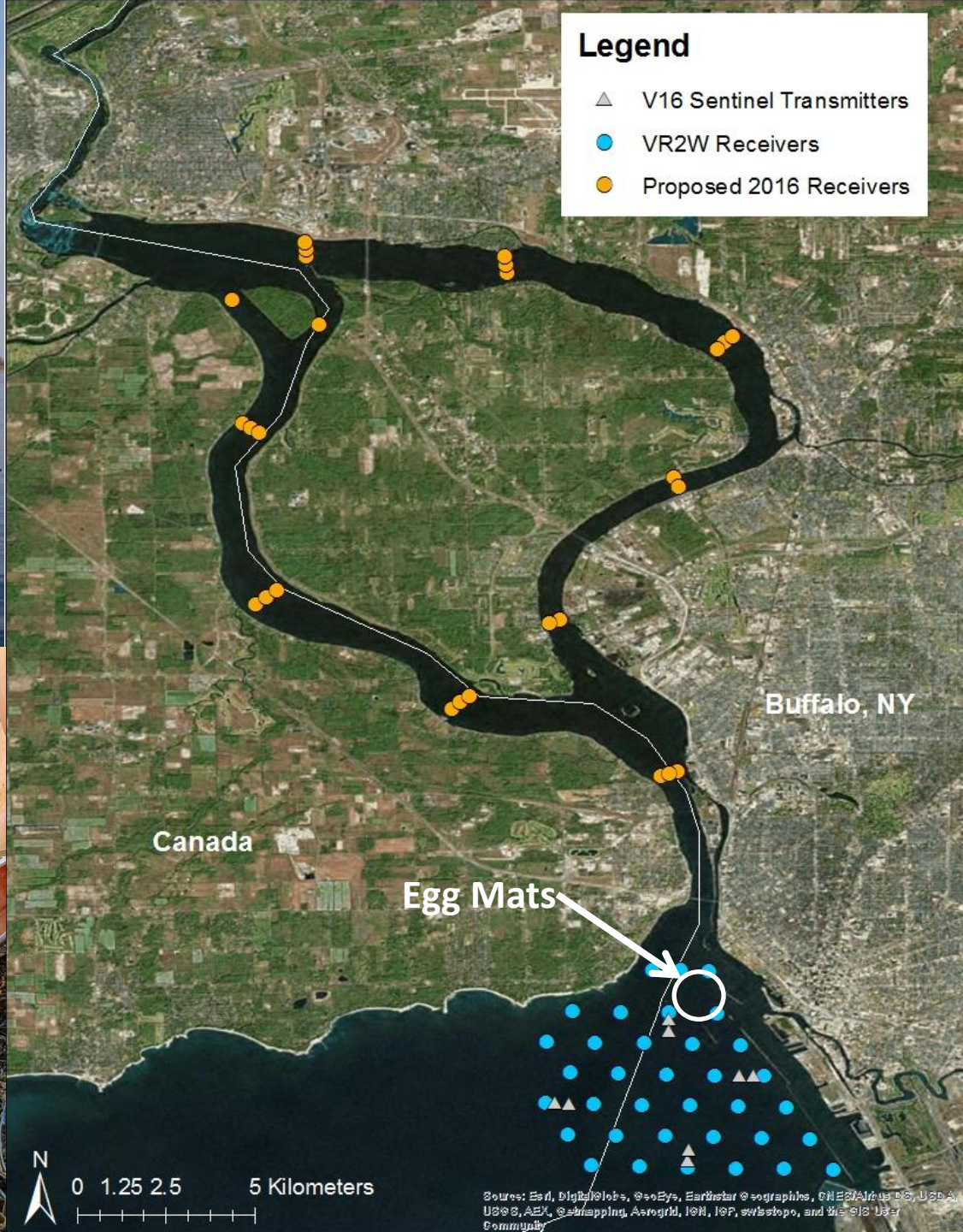
Photo credit: techalive.mtu.edu

Depth alone not adequate proxy

Likely spawning site(s) in upper river

Movement behaviors can better inform sampling design





Acknowledgements

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- U.S. Fish and Wildlife Service, Alpena Fish and Wildlife Conservation Office
- U.S. Fish and Wildlife Service, Lower Great Lakes Fish and Wildlife Conservation Office

